



BILLING CODE: 4510-26-P

DEPARTMENT OF LABOR

Occupational Safety and Health Administration

[Docket No. OSHA-2015-0024]

Jardon and Howard Technologies, Incorporated; Grant of a Permanent Variance

AGENCY: Occupational Safety and Health Administration (OSHA), Labor.

ACTION: Notice.

SUMMARY: In this notice, OSHA grants a permanent variance to Jardon and Howard Technologies, Incorporated from several provisions of OSHA standards that regulate commercial diving operations in Subpart T of OSHA's general industry standards.

DATES: The permanent variance specified by this notice becomes effective on **[INSERT DATE OF PUBLICATION IN THE *FEDERAL REGISTER*]** and shall remain in effect until it is modified or revoked.

FOR FURTHER INFORMATION CONTACT: Information regarding this notice is available from the following sources:

Press inquiries: Contact Mr. Frank Meilinger, Director, OSHA Office of Communications, U.S. Department of Labor; telephone: (202) 693-1999 or email: meilinger.francis2@dol.gov.

General and technical information: Contact Mr. Kevin Robinson, Director, Office of Technical Programs and Coordination Activities, Directorate of Technical Support and Emergency Management, Occupational Safety and Health Administration, U.S. Department of Labor; telephone: (202) 693-2110 or email: robinson.kevin@dol.gov.

SUPPLEMENTARY INFORMATION:

Copies of this Federal Register notice. Electronic copies of this *Federal Register* notice are available at <http://www.regulations.gov>. This *Federal Register* notice, as well as news releases and other relevant information, also are available at OSHA's webpage at <http://www.osha.gov>.

I. Notice of Application

Jardon and Howard Technologies, Incorporated, ("JHT" or "applicant"), submitted on September 25, 2015, an application for a permanent multi-state variance and interim order under Section 6(d) of the Occupational Safety and Health Act of 1970 ("OSH Act"; 29 U.S.C. 655) and 29 CFR 1905.11 ("Variances and other relief under section 6(d)"). JHT's application seeks a permanent variance from the provisions in OSHA's standards that regulate commercial diving operations (CDO), located in Subpart T of 29 CFR 1910, that require:

(1) a buoyancy compensator to have a inflation source separate from the breathing gas supply when used for SCUBA diving (29 CFR 1910.430(d)(3));

(2) use of an inflatable flotation device capable of maintaining the diver at the surface in a face-up position, having a manually activated inflation source independent of the breathing supply, an oral inflation device, and an exhaust valve (29 CFR 1910.430(d)(4));

(3) the employer to instruct the diver to remain awake and in the vicinity of the decompression chamber which is at the dive location for at least one hour after the dive (including decompression or treatment as appropriate) for any dive outside the no-decompression limits, deeper than 100 feet of sea water (FSW), or using mixed gas as a breathing mixture (29 CFR 1910.423(b)(2));

(4) the employer to make available at the dive location a decompression chamber capable of recompressing the diver at the surface to a minimum of 165 FSW (6 ATA) (29 CFR 1910.423(c)(1));¹

(5) the employer to make available within 5 minutes of the dive location a dual-lock, multiplace decompression chamber (29 CFR 1910.423(c)(3)); and

(6) that self-contained underwater breathing apparatus (SCUBA) diving not be conducted at depths deeper than 100 FSW or outside the no-decompression limits unless a decompression chamber is ready for use (29 CFR 1910.424(b)(2)).

JHT is a contractor for the U.S. Department of Commerce, National Oceanic and Atmospheric Administration (NOAA), a federal government agency that conducts and promotes undersea research using a variety of modes, including diving operations. On September 5, 2014, OSHA granted NOAA alternate standards² regulating its use of inflatable flotation devices and decompression chambers during NOAA diving operations (Exhibit OSHA-2015-0024-0003, OSHA's Comments and Decisions to NOAA's Request for an Alternate Standard on Diving) ("NOAA Alternate Diving Standards") (see Section II.A. for further information on NOAA's Alternate Diving Standards). To account for the technological advances and design improvements that have been made to buoyancy compensatory devices (BCD) since OSHA first published the CDO standard in 1977 (*see* 42 FR 37662 (July 22, 1977)), the NOAA Alternate Diving Standards permit

¹ The full text of 29 CFR 1910.423(c)(1)(i)-(iii) reads: "A decompression chamber capable of recompressing the diver at the surface to a minimum of 165 FSW (6 ATA) shall be available at the dive location for: (i) Surface-supplied air diving to depths deeper than 100 FSW and shallower than 220 FSW; (ii) Mixed gas diving shallower than 300 FSW; (iii) Diving outside the no-decompression limits shallower than 300 FSW."

² An alternate standard is the federal agency equivalent to a variance, and federal agency heads may seek and obtain alternate standards from OSHA pursuant to 29 CFR 1960.17.

NOAA to use modern BCD during diving operations that deviate from the configuration requirements in OSHA's CDO standard, but provide equal or greater safeguards to the diver. The NOAA Alternate Diving Standards also provide NOAA with modified requirements regarding the use of decompression chambers, including expanding the depth limit for SCUBA dives within the no-decompression limits³ (from 100 to 130 FSW), and modifying decompression chamber availability requirements for certain no-decompression dives up to 130 FSW in depth.

JHT stated in the application that divers who conduct diving operations for NOAA typically dive from NOAA-operated "uninspected vessels" in U.S. navigable waters; such diving operations fall under OSHA's jurisdiction.⁴ When conducting dives for NOAA, JHT divers are obliged to follow all of the requirements of the NOAA Diving Program (NDP). JHT requested the permanent variance to permit JHT to deviate from the below-discussed provisions of OSHA's CDO standard based on the same conditions that apply to NOAA divers under the NOAA Alternate Diving Standards, thus permitting JHT's divers to dive under the same standards under which their NOAA-employed colleagues are permitted to dive.

JHT's application contends that the permanent variance would provide employees with a place of employment that is at least as safe and healthful as they are able to obtain under the existing provisions of OSHA's CDO standard. JHT certifies that all affected

³ The definitions provided in Subpart T, 29 CFR 1910.402, define "no-decompression limits" as "the depth-time limits of the 'no-decompression limits and repetitive dive group designation table for no-decompression air dives', U.S. Navy Diving Manual, or equivalent limits which the employer can demonstrate to be equally effective."

⁴ For more information on OSHA's enforcement authority over uninspected vessels on U.S. navigable waters, see OSHA Directive Number: CPL-02-01-047, "OSHA Authority over Vessels and Facilities on or Adjacent to U.S. Navigable Waters and the Outer Continental Shelf (OCS)" [Dated: 02/22/2010], available at: https://www.osha.gov/pls/oshaweb/owandisp.show_document?p_table=DIRECTIVES&p_id=4254.

employees received a copy of the variance application and informed them of their right to petition the Assistant Secretary of Labor for Occupational Safety and Health for a hearing on its variance application.

OSHA considered JHT's application for a permanent variance and interim order and, on August 2, 2017, OSHA published a preliminary *Federal Register* notice announcing JHT's application, granting an interim order, and requesting comments (82 FR 35995 (Aug. 2, 2017)). During the comment period, which expired on September 2, 2017, OSHA received one comment from NOAA, who expressed support for granting JHT the permanent variance, made clarifications and corrections to the information in its application materials and OSHA's *Federal Register* notice, and suggested several changes to the terms of the permanent variance (OSHA-2015-0025-0010). NOAA's comment also requested that the permanent variance be extended to cover all companies who provide contract employees to dive under the NDP. After considering NOAA's comment, OSHA has decided to accept the majority of NOAA's requested changes to the terms of the permanent variance, but has not accepted NOAA's request to extend this permanent variance to cover contractors other than JHT. OSHA's responses to NOAA's comment are discussed further in Section III of this notice.

II. Supplementary Information Regarding the Variance Application

A. Background

As a NOAA contractor, JHT asserts that its divers are required to strictly follow the requirements of the NDP. But, even though NOAA-employed and JHT-employed divers work side-by-side during NDP operations, NOAA-employed divers are authorized to dive in accordance with the NOAA Alternate Diving Standards, while contractor divers (such as those employed by JHT) are not. JHT states that its divers undergo exactly the same training as NOAA employees who are also covered by the NDP, and that there are no differences between NOAA and JHT divers regarding medical clearance procedures and standards, training materials, equipment used, equipment maintenance, and diving procedures used (Ex. OSHA-2015-0024-0003, p. 1). JHT states that while the majority of the dives that JHT performs under the NDP are “scientific dives” that are exempted from OSHA’s CDO standard,⁵ JHT divers also assist NOAA employees with diving operations that are not exempt under OSHA’s CDO standard. Accordingly, when JHT conducts dives for NOAA under the NDP that would be subject to OSHA’s CDO standard, JHT seeks permission from OSHA to dive under the same standards regulating the use of inflatable flotation devices and decompression chambers that OSHA has permitted NOAA-employed NDP divers to follow, pursuant to the NOAA Alternate Diving Standards.

OSHA granted NOAA the alternate standards in 2014 in response to an application that NOAA submitted to OSHA in June 2011 proposing a total of 12 alternate

⁵ Section 1910.401(a)(2)(iv) of the CDO standard provides the exemption for scientific diving from the CDO standard’s coverage, and Appendix B to the CDO standard provides guidelines for identifying the scientific diving programs that are exempt.

standards to 29 CFR 1910, Subpart T, which included extensive introductory, background, and explanatory information in support of the application (Exhibit OSHA-2015-0024-0006, Proposed Alternate Diving Standards for the National Oceanic and Atmospheric Administration). After fully considering NOAA's application and responses to OSHA's follow up questions (Exhibit OSHA-2015-0024-0007, Responses from the NOAA Diving Program to OSHA Regarding Requested Alternate Standards for Commercial Diving Operations), OSHA decided to grant some, but not all, of the alternate standards that NOAA proposed (Exhibit OSHA-2015-0024-0008). JHT's September 25, 2015 application sought a permanent variance and interim order based on six of the alternate standards that OSHA granted to NOAA in the NOAA Alternate Diving Standards.

NOAA explained in its application materials for the alternate standards that it conducts dives under two major programs: the NOAA Diving Program (NDP) and the National Undersea Research Program (NURP). The NDP primarily supports intra agency intramural research programs conducted by personnel within NOAA's major line offices, while NURP primarily supports external research programs conducted by scientists from various academic and marine institutions. The NDP is responsible for overseeing all NOAA and contractor (including JHT) diving personnel, equipment, and activities, and ensuring that dives performed by NOAA and its contractor divers are completed safely and efficiently. The NDP, the NOAA Diving Control and Safety Board, and the NOAA Diving Medical Review Board all work together to ensure that qualified personnel and certified systems are available to safely meet NOAA's undersea research objectives.

NOAA's application also explained that it provides a robust training program to NDP divers, including contractor divers.

NOAA's application further stated that it has developed many advances in diving equipment and procedures that are now widely recognized and accepted as industry best practices. NOAA publishes many of these advances in the "NOAA Diving Manual: Diving for Science and Technology," which serves as a reference manual for all NDP divers. NOAA also maintains two additional manuals (the "NOAA Scientific Diving Standards and Safety Manual" (Revised December 2011) and the "NOAA Working Diving Standards and Safety Manual" (Version 1.0, July 14, 2011) that provide in-depth operational guidance for all dives and include the standards, policies, regulations, requirements, and responsibilities for all aspects of NOAA's diving operations.

Additionally, NOAA stated that OSHA's CDO standard, which was first published in 1977, does not account for many of the advancements that have been made in diving technology and safety. For that reason, NOAA sought alternate standards that would permit the NDP to conduct diving operations using equipment and procedures that reflect modern diving advancements. NOAA also stated that OSHA's regulations are not always consistent with other related federal diving regulations, such as 46 CFR 197, Subpart B, which provides safety and health standards for commercial diving operations conducted from vessels with a U.S. Coast Guard Certificate of Inspection (COI), also known as "inspected vessels," and facilities under the jurisdiction of the U.S. Coast Guard.

***B. Variance from Paragraphs (d)(3) and (d)(4) of 29 CFR 1910.430,
Requirements for Inflatable Flotation Devices.***

Following the terms of the NOAA Alternate Diving Standards, JHT's variance application seeks permission to use modern buoyancy compensator devices (BCD) that deviate from the requirements in 1910.430(d)(3) and (d)(4) that such devices have an inflation source that is "separate from" or "independent of" the diver's breathing gas. NOAA's application for the alternate standards explained that the overwhelming majority of commercial-off-the-shelf (COTS) BCD are designed to use the diver's breathing gas for inflation, making it difficult to comply with OSHA's requirement for a BCD to have an independent inflation source. According to NOAA, older systems that utilize separate, non-breathing gas inflation sources – particularly, carbon-dioxide cartridges – pose potential safety problems for the diver, including potential cartridge failure, and accidental activation, leading to an unexpected and potentially dangerous over-inflation of the BCD, which could cause a rapid and uncontrolled ascent of the diver to the surface. NOAA's application stated that industry recognition of these inherent safety problems prompted manufacturers to discontinue production of systems relying on such inflation sources. NOAA also explained that using a diver's emergency air supply to inflate the BCD is potentially problematic, as connecting the BCD to an auxiliary cylinder would impede a diver who is "ditching" components of a SCUBA unit during an emergency, and would also create additional points of potential equipment failure and entanglement. JHT echoed NOAA's concerns regarding the use of BCD that are inflated by a source other than the diver's breathing gas (Ex. OSHA-2015-0024-0003, p. 9).

The training that NOAA provides to its divers and contractors, including JHT, mitigates the risk of using breathing gas to inflate BCD. NDP divers are trained to continually monitor their gas supplies and return to the surface with no less than 500 psi in their SCUBA cylinders, and NOAA stated that this practice, which has been used for more than 30 years, has proven to be an effective method for managing a diver's breathing gas. NDP divers are also trained in techniques to manually inflate their BCD, both underwater and at the surface, to control their buoyancy. NOAA also explained that the amount of gas needed to inflate a BCD is minimal compared to the amount of breathing gas that is available in a standard SCUBA cylinder, and that most BCD can be fully inflated with a volume of gas equivalent to that consumed in three or fewer breaths. Therefore, NOAA asserted that taking such small amounts of gas from the SCUBA cylinder would have minimal effect on the duration of a dive. This also reduces consumption by making the diver "neutrally buoyant."

Under the alternate conditions that OSHA granted NOAA in the NOAA Alternate Diving Standards, which JHT adopts as the proposed conditions for the variance, NDP divers may use BCD that are inflated by the breathing gas supply so long as all divers carry an independent reserve cylinder of breathing gas with a separate regulator, which allows divers to orally inflate their BCD using gas from their reserve gas supplies even if their primary breathing gas supply is depleted. When granting the NOAA Alternate Diving Standards, OSHA explained that this requirement is consistent with 29 CFR 1910.424(c)(4), which requires SCUBA divers to carry a reserve breathing-gas supply. As OSHA stated in the preamble to the CDO standard final rule (42 FR at 37633), "[a reserve] supply is essential to the safety of the SCUBA diver,"

and employers must take precautions to “assure that the air reserve would not be depleted inadvertently during the dive.” OSHA ultimately concluded that NOAA’s proposed alternate standards provide equivalent safety protection to divers as 1910.430(d)(3) so long as the diver carries a reserve breathing gas supply, does not connect the reserve breathing gas to the BCD’s inflation source, and uses the BCD in accordance with the manufacturer’s instructions.

Further, OSHA noted in the NOAA Alternate Diving Standards that 1910.430(d)(4)’s requirement that SCUBA divers use a BCD with a manually activated inflation source (e.g., via a carbon-dioxide cartridge) in addition to an oral inflation device is intended to allow the diver to quickly inflate the BCD in an emergency, but technological improvements in manual BCD power inflators now allow for rapid inflation of BCD with breathing gas, but with less safety risk (e.g., over-inflation) than using carbon-dioxide cartridges. Therefore, using these manual BCD power inflators to inflate a BCD with breathing gas provides protection to a diver that is equivalent to the standard, and obviates the need for 1910.430(d)(4)’s requirement that the BCD’s inflation source be independent of the breathing supply. In addition, OSHA stated NOAA’s policy that divers always have topside support and never dive alone except when line tended, expedites the rescue of divers who must make emergency ascents to the surface, thereby reducing their risk of drowning should an inflatable flotation device malfunction.

Additionally, JHT’s proposed variance conditions would follow the NOAA Alternate Diving Standards by replacing 1910.430(d)(4)’s requirement that BCD used for SCUBA dives be capable of maintaining the diver at the surface in a “face-up position” with a requirement that the BCD be capable of maintaining the diver at the

surface in a “positively buoyant state.” NOAA’s application materials explained that the majority of COTS BCD available today are not designed to maintain unconscious divers in a face-up position on the surface, as systems capable of meeting that requirement have inherent safety-related problems that lead most manufacturers to abandon them in favor of more modern systems.

Specifically, NOAA asserted that the only BCD able to maintain a diver in a face-up position at the surface was the “horse-collar” style BCD, which has been widely replaced by jacket-style BCD (also known as stabilizing, or stab-jackets) or back-mounted systems, both of which have greater operational and safety features compared to the older style. NOAA explained that newer BCD have more lift, fewer straps (reducing entanglement hazards, particularly when removing the BCD in an emergency, or when used in conjunction with a weight harness), require fewer steps to don, would not choke divers when fully inflated on the surface, and most significantly, do not impede operation of chest-mounted drysuit inflation valves. Additionally, NOAA explained that the inability of stab-jacket or back-mounted BCD to maintain a diver in a face-up position is fully mitigated by NOAA’s requirement that divers always dive in buddy pairs (or be line-tended), and receive training in the proper technique for inflating their buddy’s BCD while keeping them oriented face-up during rescues. Accordingly, NOAA stated that the chance of a stricken diver drowning while wearing a BCD that does not provide for face-up flotation is very remote. JHT added that horse-collar BCD were not originally designed for emergency buoyancy ascents, and many are thus not equipped with the over-pressure relief valves that are essential for safe emergency ascents.

When granting the NOAA Alternate Diving Standards, OSHA noted that the preamble to the CDO final rule explained that “[t]he provision for an inflatable flotation device for SCUBA diving [was] given design specifications because an improperly designed device can be a greater safety hazard than aid” (42 FR at 37666). BCD were not commercially available when the CDO standard was published, and OSHA therefore articulated minimum design standards for inflatable flotation devices in the final rule. OSHA agreed in the NOAA Alternate Diving Standards that the flotation design of contemporary BCD is superior to the equipment that was in use when OSHA published the CDO standard in 1977. OSHA further explained that modern BCD are equipped to maintain a diver at the surface in a positively buoyant state, even if they do not “prop up” the diver’s head. OSHA thus granted NOAA’s proposed alternative standards on the condition that NOAA continues its policy of requiring that SCUBA divers not dive alone unless they are line-tended and providing topside support to those divers.

JHT’s proposed variance includes the very same condition under which OSHA approved NOAA’s Alternate Diving Standards for NOAA-employed NDP divers. As stated above, there are no differences in the training requirements, medical clearance procedures and standards, equipment use and maintenance requirements, or diving procedures that apply to NOAA-employed and JHT-employed divers who conduct diving operations for the NDP. Additionally, OSHA believes that diver safety is best promoted where diving safety rules are clear and consistently applicable to all divers at a worksite. Accordingly, OSHA accepts JHT’s proposal to adopt the conditions from the NOAA Alternate Diving Standards as the basis for the requested variance from the inflatable

flotation device requirements in 1910.430(d)(3) and (d)(4), and has decided to grant the permanent variance to JHT on those same conditions.

*C. Variance from Paragraphs (b)(2), (c)(1), (c)(3) of 29 CFR 1910.423, and (b)(2) of 29 CFR 1910.424, Requirements for Decompression Chambers.*⁶

Adopting the conditions of the NOAA Alternate Diving Standards, JHT's application proposes conditions that would allow it to deviate from the decompression chamber availability and capability requirements in OSHA's CDO standard. As OSHA explained when it granted the NOAA Alternate Diving Standards, the purpose of having a decompression chamber available and ready for use at a dive site is to treat decompression sickness (DCS) and arterial gas embolism (AGE). DCS may occur from breathing air or mixed gases at diving depths and durations that require decompression, while AGE may result from over-pressurizing the lungs, usually following a rapid ascent to the surface during a dive without proper exhalation. In the event that DCS or AGE develops, a decompression chamber, oxygen or treatment gas mixtures, and treatment tables and instructions must be readily available to treat these conditions effectively. Decompression chambers provide the most effective therapy – recompression – for DCS and AGE.

First, JHT's proposed variance would adopt the conditions of the NOAA Alternate Diving Standards that permit NOAA to deviate from the requirement of 1910.423(b)(2) that the employer instruct all divers who dive deeper than 100 FSW to remain awake and in the vicinity of a decompression chamber for one hour after the dive,

⁶ A decompression chamber is "a pressure vessel for human occupancy such as a surface decompression chamber, closed bell, or deep diving system used to decompress divers and to treat decompression sickness" (29 CFR 1910.402).

and the requirement of 1910.424(b)(2) that SCUBA diving not be conducted at depths deeper than 100 FSW or outside the no-decompression limits unless a decompression chamber is “ready for use.” In other words, sections 1910.423(b)(2) and 1910.424(b)(2) require any diver who conducts a dive deeper than 100 FSW or outside the no-decompression limits to remain alert and near a decompression chamber for at least one hour to ensure immediate treatment should DCS or AGE develop. Addressing the 100 FSW limit in the preamble to the CDO rule, OSHA stated:

By adding a depth limit to the decompression chamber requirement, the standard sets a specified depth at which all diving operations will/would require a chamber, eliminating the safety hazard inherent in operations which are planned below that depth OSHA believes that this provision will/would result in recompression capability being available for the great majority of diving situations where the probability of its being needed is greatest.

42 FR at 37662.

NOAA’s application sought permission to conduct SCUBA dives within the no-decompression limit up to 130 FSW (rather than 100 FSW) without triggering the decompression chamber requirements in 1910.423(b)(2) and 1910.424(b)(2). In support, NOAA cited statistics published by the U.S. Navy (USN) indicating that no-decompression dives to 130 FSW actually pose a lower risk of DCS to divers than no-decompression dives to 100 FSW, and also cited the extremely low DCS incident rate that NOAA has observed in no-decompression SCUBA dives that it has conducted between 101 and 130 FSW since 2000.

When granting NOAA alternate standards to 1910.423(b)(2) and 1910.424(b)(2), OSHA explained that the CDO standard sets the 100 FSW limit based on the increased risk of developing DCS and AGE on dives deeper than 100 FSW. However, OSHA

explained that the agency amended the CDO standard in 2004 to permit employers of recreational diving instructors and diving guides to comply with an alternative set of decompression chamber requirements (*see* 69 FR 7351 (February 17, 2004)).⁷ Under the conditions articulated in Appendix C to Subpart T, eligible employers are not required to provide a decompression chamber at the dive site when engaged in SCUBA diving to 130 FSW while breathing a nitrox gas mixture within the no-decompression limits.

OSHA explained in granting the NOAA Alternate Diving Standards that it created this exemption for recreational diving instructors and diving guides because the agency determined that the elevated levels of oxygen in nitrox breathing-gas mixtures reduced the incidence of DCS compared to breathing air at the same depths, and therefore found that the risk of DCS was minimal. This determination justified OSHA's use in Appendix C of the equivalent-air-depth (EAD) formula from NOAA's 2001 Diving Manual to calculate the no-decompression limits that should apply to a dive depending on the nitrogen partial pressures in the gas. As explained in the preamble to the Appendix C final rule (69 Fed Reg. at 7356), the EAD formula assumes that equivalent nitrogen partial pressures and dive durations would result in similar DCS risk to dives performed with air. OSHA concluded that the "EAD formula can accurately estimate the DCS risk associated with nitrox breathing-gas mixtures based on equivalent nitrogen partial pressures and dive durations used in air diving."

After considering the statistics and information regarding NDP operations that NOAA submitted, OSHA concluded that NOAA's proposed alternate standards would

⁷ Appendix C incorporated into the CDO standard essentially the same terms as those used in a variance that OSHA granted to Dixie Divers, Inc., a diving school that employed several recreational diving instructors, in 1999 (*see* 64 FR 71242, December 20, 1999).

provide equivalent protection to the CDO standard when NDP divers use air or nitrox breathing-gas mixtures with SCUBA, so long as NOAA complies with the no-decompression provisions of Appendix C of 29 CFR 1910, Subpart T (i.e., Condition 5, “Use of No-Decompression Limits”).⁸ Also, when using nitrox breathing-gas mixtures with SCUBA at depths up to 130 FSW, OSHA required NOAA to ensure that the partial pressure of oxygen does not exceed 1.40 ATA or 40 percent by volume (whichever exposes the diver to less oxygen),⁹ in keeping with the requirements of Appendix C. JHT’s proposed variance would adopt these same conditions under which OSHA granted the alternate standards to 1910.423(b)(2) and 1910.424(b)(2) to NOAA for NDP dives in which JHT divers participate.

Additionally, JHT’s application would adopt the conditions of the NOAA Alternate Diving Standards that permit NOAA to deviate from the decompression chamber availability and capability requirements in 1910.423(c)(1) (that employers have a 6 ATA chamber at the dive location) and 1910.423(c)(3) (that the chamber be dual-lock, multiplace, and located within five minutes of the dive location). In the original application to the agency, NOAA proposed alternate standards that would have permitted it to use a 2.8 ATA, mono-lock chamber available within two (2) hours of the dive

⁸ Condition 5 of Appendix C requires:

(a) For diving conducted while using nitrox breathing-gas mixtures, the employer must ensure that each diver remains within the no-decompression limits specified for single and repetitive air diving and published in the 2001 NOAA Diving Manual or the report entitled “Development and Validation of No-Stop Decompression Procedures for Recreational Diving: The DSAT Recreational Dive Planner,” published in 1994 by Hamilton Research Ltd. (known commonly as the “1994 DSAT No-Decompression Tables”).

(b) A employer may permit a diver to use a dive-decompression computer designed to regulate decompression when the dive-decompression computer uses the no-decompression limits specified in paragraph 5(a) of this appendix, and provides output that reliably represents those limits.

⁹ As OSHA explained in the NOAA Alternate Diving Standards, a key purpose of OSHA’s diving standards is to prevent oxygen toxicity (hypoxia), and the maximum acceptable partial pressure of oxygen when SCUBA diving is 1.40 ATA or 40 percent by volume, whichever exposes the diver to less oxygen. ATA, as used here, is the partial pressure of a constituent gas in the total pressure of a breathing gas.

location for all working dives conducted deeper than 130 FSW or outside the no-decompression limits. NOAA explained that complying with 1910.423(c)(1) and (c)(3) requires employers to use a large enough vessel to carry and transport a large and powerful decompression chamber to the dive site, but most NDP dives are conducted from small boats, which are launched from larger ships or land-based facilities. Accordingly, NOAA sought permission to use light-weight, portable decompression systems, which it referred to as “hyperlite chambers,” to transport injured divers from dive sites to larger chambers located elsewhere. Additionally, NOAA sought to make the hyperlite chamber available within two hours rather than within five minutes, of the dive location for dives conducted deeper than 130 FSW or outside the no-decompression limits.

OSHA did not grant NOAA the alternate standards based on these proposed conditions, but rather granted revised alternate standards in order to ensure that NOAA divers would receive equivalent protection to the CDO standard. Regarding the chamber *capability* requirements, OSHA found that mono-lock chambers provide limited hyperbaric treatment options (for example, administration of oxygen) to a diver, and explained that the preamble to the original CDO final rule discusses and justifies Subpart T’s capability requirements for decompression chambers, including the requirements that the chamber have 6 ATA capability and be dual-lock (i.e., have two compartments) and multiplace (i.e., have a main lock large enough to accommodate and decompress two individuals) (see 42 FR at 37661-63). Accordingly, OSHA stated that mono-lock chambers may be an option for transporting divers to larger chambers, but it does not

provide divers with protection that is equivalent to the CDO standard's requirements. Therefore, OSHA did not approve NOAA's proposed chamber-capability alternative.

Regarding the proposed chamber-*availability* alternative, OSHA noted that the preamble to the CDO final rule explained that having the decompression chamber near the dive site was originally considered necessary "because the surface decompression tables are commonly designed to be used with equipment that meets this criterion" (42 FR at 37662). However, OSHA reexamined 1910.423(c)(3)'s five-minute availability requirement when it developed Appendix C to Subpart T. In Appendix C, OSHA found that, for no-decompression dives at 130 FSW or less, a four-hour travel delay to a 6-ATA decompression chamber is acceptable when the employer meets specified conditions, including: verifying before starting diving operations the availability of a 6-ATA treatment facility, qualified healthcare professionals, and a rescue service; ensuring that suitable transportation to the decompression chamber is available at the dive site during diving operations; ensuring at least two attendants qualified in first-aid and administering oxygen treatment are available for treatment during diving operations; and that these attendants administer medical-grade oxygen to the injured diver during transportation to the treatment facility. OSHA came to this conclusion because, as explained in the preamble to the Appendix C final rule, "a four-hour delay is unlikely to impair treatment outcomes for [DCS], and that [AGE] is rare among recreational divers and can be prevented with proper training and experience" (69 FR at 7359-60).

After considering the information that NOAA submitted regarding the NDP's diving operations, OSHA determined that, for no-decompression dives using air or nitrox that are 130 FSW or less, a four-hour travel delay to a 6 ATA chamber provides NDP

divers with protection equivalent to the CDO standard, so long as NOAA meets the medical-treatment provisions of Appendix C to the CDO rule (i.e., Condition 8, “Treating Diving-Related Medical Emergencies”). OSHA granted the NOAA Alternate Diving Standards under these conditions, and JHT now seeks to conduct NDP dives according to the same conditions.

Based on a technical review of the JHT’s application, the NOAA Alternate Diving Standards, and related supporting material, OSHA finds that the proposed conditions would also provide JHT divers with protection equivalent to the CDO standard; there are no differences in the training requirements, medical clearance procedures and standards, equipment use and maintenance requirements, or diving procedures that apply to NOAA-employed and JHT-employed divers who dive under the NDP, and diver safety is best promoted where diving safety rules are clear and consistently applicable to all divers at a worksite.

D. Multi-State Variance

JHT’s land-based operations, which are responsible for managing and administering these diving projects, are located at: (1) NOAA CCEHBR Laboratory, 219 Fort Johnson Road, Charleston, South Carolina, 29412; and (2) NOAA/NOS Center for Coastal Fisheries and Habitat Research, 101 Pivers Island Road, Beaufort, North Carolina, 28516. JHT conducts diving operations with NOAA with essentially no geographical limitations, and has conducted diving operations with NOAA in various navigable waters within OSHA’s geographical authority, including the navigable waters of the Virginia, North Carolina, South Carolina, Georgia, and Florida, the Florida Keys,

the Gulf of Mexico, the Caribbean (e.g., U.S. Virgin Islands and Puerto Rico) and the Pacific (e.g., Hawaii, Guam, Palau, Marianas and American Samoa).

Twenty-eight state safety and health plans have been approved by OSHA under section 18 of the OSH Act.¹⁰ The scope and application section of the CDO standard, 29 CFR 1910.401, explains that OSHA has jurisdiction over commercial diving operations when the dive location is within OSHA's geographical authority, and when such operations are not covered by the U.S. Coast Guard. As explained in OSHA's Directive regarding enforcement of Subpart T ("CDO Directive"),¹¹ OSHA's CDO standard covers private-sector employers in federal enforcement states, and employers who dive in association with maritime standards (i.e., shipyard employment, longshoring, and marine terminals) when these operations are not covered by a State with an OSHA-approved State Plan. States with approved State Plans enforce the diving standard: (1) When commercial diving operations are being conducted by private-sector employees not engaged in shipyard employment or marine terminal activities (e.g., equipment repair, sewer maintenance, or construction); (2) in maritime operations (i.e., shipyard employment and marine terminals) as provided by the plans in California, Minnesota, Vermont, and Washington; and (3) with regard to state and local government employees. The location of the dive determines which entity has authority over the dive conditions.

¹⁰ Six State Plans (Connecticut, Illinois, Maine, New Jersey, New York, and the Virgin Islands) limit their occupational safety and health authority to state and local employers only. State Plans that exercise their occupational safety and health authority over both public- and private-sector employers are: Alaska, Arizona, California, Hawaii, Indiana, Iowa, Kentucky, Maryland, Michigan, Minnesota, Nevada, New Mexico, North Carolina, Oregon, Puerto Rico, South Carolina, Tennessee, Utah, Vermont, Virginia, Washington, and Wyoming.

¹¹ See OSHA Directive Number: CPL-02-00-151, "29 CFR part 1910, subpart T—Commercial Diving Operations" [Dated: 06/13/2011], available at: http://www.osha.gov/OshDoc/Directive_pdf/CPL_02-00-151.pdf.

Under 29 CFR 1902.8(c), an employer may apply to Federal OSHA for a variance where a state standard is identical to a federal standard addressed to the same hazard, and the variance would be applicable to employment or places of employment in more than one state, including at least one state with an approved plan. Of the twenty-eight State Plans, only California, Michigan, Oregon, and Washington have promulgated their own state diving standards; Arizona has adopted 29 CFR 1910, subpart T with the exception of one provision that is not germane to this application,¹² and all other State Plans have fully adopted 29 CFR part 1910, subpart T by reference. Michigan and Oregon adopted diving standards 29 CFR part 1910, subpart T by reference, although Oregon's diving standards include additional State-specific rules.¹³ Washington's diving standards do not adopt 29 CFR part 1910, subpart T by reference, but include rules that are identical to each of the federal requirements at issue in JHT's application (see Washington Administrative Code, Chapter 296-37, §§ 510-595). California's diving operations standards contain two rules that are substantively identical to two of the OSHA standards at issue in JHT's application (see California Code of Regulations, Title 8, Subchapter 7, Group 26 §§ 6062(b)(1) and (3)((A)-(C)) (substantively identical to 29 CFR 1910.423(c)(1) and (c)(3)). Exhibit OSHA-2015-0024-0009 provides a side-by-side comparison of the Washington and California standards that are identical in substance and requirements to the Federal OSHA standards at issue in this variance application.

¹² See 20 A.A.C. 5 § R20-5-602.01 (adopting OSHA's CDO Standard with the exception of 29 CFR 1910.401(a)(2)(ii)), available at: http://apps.azsos.gov/public_services/Title_20/20-05.pdf.

¹³ See Michigan's Occupational Health Standards, Part 504, § R 325.50303, "Adoption by reference of federal standard," available at: http://www.michigan.gov/documents/lara/lara_miosha_OH_504_417497_7.pdf; Oregon Admin. Rule 437 002-0340, "Adoption by Reference," available at: <http://osha.oregon.gov/OSHArules/div2/div2T.pdf#page=7>.

JHT certified in its application that it has not filed an application for a permanent variance on the same material facts with a State Plan program. JHT's variance application fits the parameters of 29 CFR 1902.8, and Federal OSHA's action on this application will be deemed prospectively an authoritative interpretation of JHT's compliance obligations regarding the applicable state standards in the places of employment covered by the application. As part of the permanent variance process, OSHA's Directorate of Cooperative and State Programs will notify all State Plans that are potentially affected by OSHA's decision to grant JHT a permanent variance.

III. Comments on the Proposed Variance

On August 2, 2017, OSHA published a preliminary notice announcing JHT's application, granting an interim order, and requesting comments (82 FR 35995 (Aug. 2, 2017)). In response, OSHA received one public comment on the proposed variance application from NOAA, who expressed support for granting JHT the permanent variance, made clarifications and corrections to the information in the notice, and suggested several changes to the terms of the permanent variance (OSHA-2015-0024-0010). As explained below, OSHA has accepted some of NOAA's requested changes to the terms of the permanent variance and declined others.

Regarding proposed Condition A, which governs the scope of the variance (82 FR at 36002), NOAA commented on the language in proposed Paragraphs (1) and (2) that limited the applicability of the variance to "commercial diving operations conducted for NOAA under the NDP from a NOAA vessel commercial diving operations," and "from an uninspected vessel within OSHA's geographical authority." NOAA explained that the NDP dives are launched from a variety of platforms, including uninspected vessels

operated by NOAA, as well as inspected vessels contracted by NOAA, piers, docks, and shore. Because not all NDP dives are conducted from NOAA vessels, NOAA commented that the variance would have greater applicability if these paragraphs were changed to include all dives under the control of the NDP and within the jurisdiction of OSHA. After considering this comment, OSHA determined that a change to the conditions of the permanent variance was warranted. The conditions to the variance provide JHT divers with protection equivalent to the CDO standard irrespective of whether the dive site is a vessel or a pier, dock, or shore, and diver safety is best promoted where diving safety rules are clear and consistently applicable to all divers at all worksites. Accordingly, OSHA has revised paragraphs (1) and (2) of Condition A so that the variance applies to all dives under the control of the NDP and within the jurisdiction of OSHA.

Regarding proposed Condition E, which concerns worker qualification and training requirements (82 FR at 36003), NOAA provided a comment on the requirement in paragraph (1) that requires JHT to develop and implement an effective qualification and training program for its affected divers that, as a minimum, meets the requirements set forth in 29 CFR 1910.410 (qualifications of a dive team). NOAA stated that JHT does not have a diving program, but rather relies on the NDP to train, equip, medically monitor and supervise its divers. NOAA therefore suggested that OSHA change this condition so that it requires JHT to ensure that its divers adhere to all requirements of the NDP, a program which meets the requirements set forth in 29 CFR 1910.410. Given JHT's relationship with NOAA and the limited scope of the variance, OSHA determined that changing Condition E to require that JHT's qualification and training program also

meet the requirements of the NDP is warranted. OSHA does not agree, however, with NOAA's suggestion that the NDP alone should substitute for JHT's obligation to develop and implement an effective qualification and training program for its divers.

Accordingly, OSHA revised paragraph (1) of Condition E of the permanent variance so that it requires JHT to develop a qualification and training program that, at a minimum, meets all of the requirements of 29 CFR 1910.410 *and* all of the requirements of the NDP.

NOAA also commented on the requirement in paragraph (2) of proposed Condition E that required JHT's affected divers to successfully complete NDP's three-week, 140-hour "Working Diver" course. NOAA explained that the "Working Diver" course was discontinued in September 2014 and replaced with a modular course that also provides a three-week training evolution. NOAA commented that OSHA should change the language so that it requires JHT divers to complete all training required by the NDP to become a NOAA diver. After considering this comment, OSHA determined that a change to the conditions of the permanent variance was warranted. Removing the reference to the specific course will avoid the confusion that would result from requiring JHT to complete a discontinued course, and will maintain the original intent of the provision, which was to ensure that JHT's divers complete the same training that NOAA requires for its NDP divers. Accordingly, OSHA has updated paragraph (2) of Condition E of the permanent variance to remove any reference to the "Working Diver" course, and instead require that JHT ensure that each affected diver successfully completes all training required by the NOAA Diving Program that is required to become a NOAA Diver.

NOAA also commented on paragraph (3) to proposed Condition E, which required JHT to ensure that its diver training program include eight specific safety-related components. NOAA stated that JHT does not have a diver training program, and instead relies on the NDP to train its divers, but all of the listed components in paragraph (3) are included in the NDP's diver authorization requirements. NOAA suggested that OSHA revise the paragraph so that it requires JHT's divers to complete all continuing training required by the NDP to maintain their status as an authorized NOAA diver. After considering this comment, OSHA determined that revising the condition is warranted. The permanent variance only applies to JHT divers when they dive for NOAA as part of the NDP, and to be authorized to dive for the NDP, a JHT diver must satisfy all of the eight components listed in paragraph (3). Accordingly, OSHA has revised paragraph (3) of Condition E of the permanent variance so that JHT must ensure that all of its divers complete all continuing training required by the NDP to maintain status as an authorized NOAA diver, and that such training must, at a minimum, include the eight components listed in paragraph (3).

Regarding proposed Condition G, which provides various OSHA notification requirements (82 FR at 36003), NOAA commented that the condition in paragraph (2) to provide OSHA with any recordable dive-related incident investigation reports (using OSHA Form 301) within 24 hours of the incident does not provide sufficient time to determine the scope of a diving injury, assess root causes, and determine corrective action. The comment further noted that this expedited reporting requirement was not placed upon NOAA under the Alternate Standards to the Commercial Diving Standards, and that NOAA may submit such reports within seven (7) days of the incident. Because

JHT divers will only dive under the control of the NDP, NOAA commented that the expedited reporting requirement for incidents involving JHT's divers was onerous. After considering this comment, OSHA determined that no change to this condition of the permanent variance was warranted. OSHA believes that providing expedited notification to OSHA of injuries and illnesses is essential because time is a critical element in OSHA's ability to determine the continued effectiveness of the variance conditions in preventing dive-related incidents. Additionally, OSHA believes that expedited notification of injuries and illnesses will ensure that JHT identifies and implements appropriate corrective and preventative actions. Accordingly, this condition of the permanent variance has not been changed and JHT must submit incident reports for recordable injuries or illnesses within twenty-four hours of the incident.

Regarding proposed Condition G, Paragraph (5), NOAA commented that the requirement for JHT to notify OSHA on the need to revise dive procedures to accommodate changes in diving operations that affect its ability to comply with the conditions of the permanent variance within fifteen (15) working days is unwarranted. The comment further notes that JHT does not have a diving operation, as all on-duty dives performed under the control of the NDP, and JHT relies completely upon NOAA to train, equip, medically monitor, and supervise its divers. After considering this comment, OSHA determined that no change is warranted. OSHA is not making a change to this condition because the permanent variance is granted on the basis of the proposed work activity being determined "as safe and healthful" as coverage provided by the standard, and without updates about any changes to the procedures governing these work activities, OSHA will be unable to determine if the permanent variance continues to provide

equivalent worker protection. Additionally, while JHT will be performing diving operations under the NDP, notification of changes to procedures that may impact the conditions of the permanent variance will allow OSHA to ensure that JHT identifies and implements appropriate preventative and corrective actions. Accordingly, this condition to the permanent variance has not been changed and JHT must notify OTPCA and the Area Office closest to the dive location within fifteen (15) working days of any changes to its dive procedures that affect its ability to comply with the conditions of the proposed permanent variance.

Regarding proposed Condition G, Paragraph (7), NOAA commented that the condition requiring JHT to provide OTPCA and the OSHA Area and Regional Offices closest to the preceding year's dive locations a report summarizing dives completed and evaluating the effectiveness of the variance conditions was unnecessary. NOAA again noted that OSHA did not place a similar requirement on NOAA when it granted the NOAA Alternate Diving Standards, and given that JHT divers will only dive under the control of the NOAA Diving Program, the requirement is onerous. NOAA also stated that the NDP produces an annual report which outlines all diving activities each year, which provides dives by location, type, depth and task, and requested that OSHA change the condition to allow JHT to meet the requirement by submitting the NDP's annual report. After considering this comment, OSHA has determined that it will not revise this reporting condition or replace it with a requirement for JHT to submit the NDP's annual report. OSHA believes that JHT providing this annual summary outlining the dives completed and its evaluation of the effectiveness of the variance conditions is essential to OSHA's monitoring of the effectiveness of the permanent variance.

The final comment from NOAA was a request to make the permanent variance applicable to all employers who supply contract employees who are part of the NOAA Diving Program. After considering this comment, OSHA has determined that applicability of the permanent variance will only be to JHT and its employees who engage in diving with NOAA under the NDP. JHT alone applied for this permanent variance under 29 USC 655(d) and 29 CFR 1905.11. Should any other company that supplies contract employees to NOAA to dive as part of the NOAA Diving Program desire a similar permanent variance, the company must apply for a permanent variance. Accordingly, OSHA has not updated the permanent variance in response to this comment.

IV. Description of Conditions Specified for the Permanent Variance

This section describes the conditions that comprise the alternative means of compliance with 29 CFR 1910.430(d)(3); 29 CFR 1910.430(d)(4); 29 CFR 1910.423(b)(2); 29 CFR 1910.423(c)(1); 29 CFR 1910.423(c)(3) and 29 CFR 1910.424(b)(2), that form the basis of the permanent variance that OSHA is granting JHT in this notice.

Condition A: Scope

The permanent variance applies only to the commercial diving operations that JHT conducts for NOAA, under the control of the NDP, and within OSHA's jurisdiction. The variance applies when JHT's employees dive as part of an NDP diving operation, and within OSHA's geographical authority, as defined by 29 U.S.C. 653(a), and when such operations are not covered by the U.S. Coast Guard. As explained in Section III, the permanent variance applies to all qualifying dives, and is not limited to dives from

NOAA-operated uninspected vessels. Coverage is limited to the work situations specified under the “Scope and application” section of Subpart T, Commercial Diving Operations (1910.401(a)), and does not apply to commercial diving operations that are already exempted under 1910.401(a)(2).¹⁴ When implementing the conditions of the permanent variance, JHT must comply fully with all safety and health provisions that are applicable to commercial diving operations as specified by 29 CFR 1910, Subpart T, except for the requirements specified by 29 CFR 1910.430(d)(3), 1910.430(d)(4), 1910.423(b)(2), 1910.423(c)(1), 1910.423(c)(3), and 1910.424(b)(2).

Condition B: Definitions

In Condition B, OSHA defines a number of abbreviations that are used in the permanent variance. Defining these abbreviations is intended to clarify and standardize their usage, thereby enhancing the JHT’s and its employees’ understanding of the conditions specified by the permanent variance.

Condition C: Requirements for Inflatable Flotation (or Buoyance Compensation)

Devices

In Condition C, OSHA requires that, when using a buoyancy compensator device (BCD) for SCUBA diving, JHT must ensure that: the device is used in accordance with the manufacturer’s instructions; is capable of being inflated orally and via the diver’s primary breathing gas supply; and, all divers carry an independent reserve cylinder of breathing gas with a separate regulator that could be used for BCD inflation in an

¹⁴ Section 1910.401(a)(2) provides that the CDO standard does not apply to any dive (i) performed solely for instructional purposes, using open-circuit, compressed-air SCUBA and conducted within the no-decompression limits; (ii) performed solely for search, rescue, or related public safety purposes by or under the control of a governmental agency; (iii) governed by 45 CFR Part 46 (Protection of Human Subjects, U.S. Department of Health and Human Services) or equivalent rules or regulations established by another federal agency, which regulate research, development, or related purposes involving human subjects; or (iv) fitting the standard’s definition of “scientific diving.”

emergency. When SCUBA diving, JHT must also ensure that divers use an inflatable flotation device that is: capable of maintaining the diver at the surface in a positively buoyant state; and, has a manually activated inflation source, an oral inflation device, and an exhaust valve. Also, when SCUBA diving, JHT must ensure divers are never permitted to dive alone unless they are line-tended and provided with topside support.

Based upon the technical review of the alternate conditions described above (see sec. II.B.), OSHA has determined that these conditions provide JHT's divers with protection equivalent to the provisions in the CDO standard that regulate inflatable flotation devices. OSHA approved these same conditions for NOAA-employed NDP divers when it granted the NOAA Alternate Diving Standards on September 5, 2014, and there are no differences in training requirements, medical clearance procedures, equipment use and maintenance requirements, and diving procedures for NOAA-employed and JHT-employed divers under the NDP. OSHA grants JHT's request for a permanent variance, using the conditions of the NOAA Alternate Diving Standards, in combination with the additional conditions specified in this notice.

Condition D: Requirements for Decompression Chambers

Condition D requires that, for any dive that is outside the no-decompression limits or deeper than 130 FSW or using mixed gas with a percentage of oxygen less than air as a breathing mixture, JHT must instruct the diver to remain awake and in the vicinity of the decompression chamber which is at the dive location for at least one hour after the dive (including decompression or treatment as appropriate). Additionally, for any dive using air or a nitrox breathing-gas mixture within the no-decompression limits that is deeper than 100 FSW but no deeper than 130 FSW, JHT must make available within four hours

of the dive location a dual-lock and multiplace decompression chamber capable of recompressing the diver at the surface to a minimum of 165 FSW (6 ATA). JHT must also meet the medical-treatment provisions of Appendix C to the CDO rule (i.e., Condition 8, “Treating Diving-Related Medical Emergencies”), and is prohibited from conducting SCUBA diving using air or nitrox breathing-gas mixture at depths deeper than 100 FSW but no deeper than 130 FSW, or outside the no-decompression limits, unless a 6 ATA decompression chamber is ready for use (diving operations performed for instructional purposes in accordance with § 1910.401(a)(2)(i) are exempt). When using a nitrox breathing-gas mixture, JHT must meet the no-decompression provisions of Appendix C to the CDO rule (i.e., Condition 5, “Use of No-Decompression Limits”) and ensure that the partial pressure of oxygen in breathing-gas mixtures does not exceed 1.40 ATA or 40% by volume, whichever exposes the diver to less oxygen.

Based upon the technical review of the proposed alternate conditions regarding its use of decompression chambers (see section II.C.), OSHA has determined the specified conditions provide JHT’s divers with protection equivalent to the CDO standard. OSHA approved these same conditions for NOAA-employed NDP divers when it granted the NOAA Alternate Diving Standards on September 5, 2014, and there are no differences in training requirements, medical clearance procedures, equipment use and maintenance requirements, and required diving procedures for NOAA-employed and JHT-employed divers under the NDP. OSHA grants the requested permanent variance based on the conditions of the NOAA Alternate Diving Standards in combination with the additional conditions specified in this notice.

Condition E: Worker Qualification and Training

Condition E requires JHT to develop and implement an effective qualification and training program for its affected divers that, at a minimum, meets the requirements set forth in 29 CFR 1910.410 qualifications of a dive team. As explained in section III of this notice, Condition E also provides that JHT's qualification and training program must also meet the requirements of the NOAA Diving Program (NDP). The condition specifies that JHT must ensure that all affected divers successfully complete all training required by the NOAA Diving Program to become a NOAA Diver. The condition also specifies that JHT must ensure that all affected divers complete all of the NDP's diver training requirements to be authorized NOAA Diver, and that such training must, at a minimum, include: (1) instruction in the conditions of the permanent variance; (2) annual refresher training in oxygen administration (academic and practical components); (3) instruction in maintaining current CPR/AED and First Aid certification; (4) maintaining proficiency in diving by making at least three (3) dives per quarter; (5) completing and passing an annual swim test; (6) completing and passing an annual skills test to demonstrate the diver's ability to safely operate underwater; (7) successfully completing one or more annual rescue drills to demonstrate the diver's ability to surface, extricate, treat and evacuate the victim of a diving accident; and (8) instruction in properly verifying that the diver's life support gear was serviced annually by a certified technician. JHT must also document and track all affected divers' training.

OSHA believes that having well-trained and qualified divers performing the required dive tasks ensures that they recognize, and respond appropriately to underwater safety and health hazards. These qualification and training requirements will enable affected JHT divers to cope effectively with emergencies, as well as the discomfort and

physiological effects of hyperbaric exposure, thereby preventing injury, illness, and fatalities.

Condition F: Recordkeeping

Condition F requires JHT to maintain records of specific factors associated with each dive. The information gathered and recorded under this provision, in concert with the information provided under Condition G (using OSHA 301 Incident Report form to investigate and record dive-related recordable injuries as defined by 29 CFR 1904.4, 1904.7, 1904.8 through 1904.12), will enable JHT and OSHA to determine the effectiveness of the permanent variance in preventing DCS and other dive-related injuries and illnesses.¹⁵

Condition G: Notifications

The notification provisions in Condition G are intended to ensure that JHT provides timely notification to OSHA of dive-related incidents involving JHT divers and dive team members. Under this condition, JHT is required to: (1) notify the Office of Technical Programs and Coordination Activities (OTPCA) and the Area Office closest to the dive location of any recordable injuries, illnesses, in-patient hospitalizations, amputations, loss of an eye, or fatality that occur as a result of diving operations within eight (8) hours of the incident; (2) provide OTPCA and the Area Office closest to the dive location within twenty-four (24) hours of the incident with a copy of the incident investigation report (using OSHA 301 form); (3) include on the OSHA 301 form information on the diving conditions associated with the recordable injury or illness, the

¹⁵See 29 CFR 1904, Recording and Reporting Occupational Injuries and Illnesses (http://www.osha.gov/pls/oshaweb/owandisp.show_document?p_table=STANDARDS&p_id=9631); recordkeeping forms and instructions (<http://www.osha.gov/recordkeeping/RKform300pkg-fillable-enabled.pdf>); and updates to OSHA's recordkeeping rule, 79 Fed Reg. 56130, September 18, 2014 (more information available at: <http://www.osha.gov/recordkeeping2014/index.html>).

root-cause determination, and preventive and corrective actions identified and implemented; (4) provide certification that it informed affected divers of the incident and the results of the incident investigation; (5) notify OTPCA and the Area Office closest to the dive location within fifteen (15) working days should the applicant need to revise its dive procedures to accommodate changes in its diving operations that affect its ability to comply with the conditions of the permanent variance; (6) obtain OSHA's written approval prior to implementing the revision in its dive procedures to accommodate changes in its diving operations that affect its ability to comply with the conditions in the permanent variance; (7) by the fifteenth (15th) of January, at the beginning of each new calendar year, provide OTPCA, and the Area Offices and their corresponding Regional Offices closest to the preceding year's dive locations, with a report summarizing the dives completed during the year just ended and evaluating the effectiveness of the variance conditions in providing a safe and healthful work environment and in preventing dive-related incidents; and (8) Notify OSHA if it ceases to do business, has a new address or location for its main office, or transfers the operations covered by the permanent variance to a successor company; and (9) Ensure that OSHA would approve the transfer of the permanent variance to a successor company.

OSHA acknowledges that the requirement for completing and submitting the dive-related (recordable) incident investigation report (OSHA 301 form) is more restrictive than OSHA's generally applicable recordkeeping requirements, which require employers to complete an OSHA 301 form within seven (7) calendar days of the incident (29 CFR 1904.29(b)(3)). The abbreviated timeframe for investigating and reporting incidents under this permanent variance applies only to dive-related and recordable

incidents. Providing expedited notification to OSHA of such incidents is essential because time is a critical element in OSHA's ability to determine the continued effectiveness of the variance conditions in preventing dive-related incidents, and to ensure that JHT identifies and implements appropriate corrective and preventive actions. Timely notification permits OSHA to take necessary and appropriate actions to prevent further injuries and illnesses, including determining whether to revise or revoke the conditions of the permanent variance. Providing notification to affected employees will ensure that employees are aware of the precautions that JHT implements to prevent similar future incidents.

Additionally, this condition requires JHT to notify OSHA if it ceases to do business, has a new main office address or location, or transfers the operations covered by the permanent variance to a successor company. Further, pursuant to this condition, OSHA must approve the transfer of the permanent variance to a successor company. These requirements will: (1) provide assurance that the successor company has knowledge of, and would comply with, the conditions specified by the permanent variance; (2) allow OSHA to communicate effectively with the applicant regarding the status of the permanent variance; and (3) expedite the agency's administration and enforcement of the permanent variance, thereby ensuring the continued safety of affected divers.

V. Decision

As previously indicated in this notice, OSHA reviewed JHT's application for a permanent variance and interim order, and the supporting technical documentation, including the alternate standards that OSHA granted to NOAA on September 5, 2014.

After completing this review, OSHA determined that JHT's application proposes an effective alternative means of protection that will protect its employees engaged in NDP diving operations as effectively as the requirements articulated in 29 CFR 1910.430(d)(3); 29 CFR 1910.430(d)(4); 29 CFR 1910.423(b)(2); 29 CFR 1910.423(c)(1); 29 CFR 1910.423(c)(3) and 29 CFR 1910.424(b)(2). Based on this determination, on August 2, 2017, OSHA published a preliminary *Federal Register* notice (82 FR 35995) announcing JHT's application for a permanent variance, granting JHT an interim order, and issuing a request for comments. Since OSHA granted the interim order, JHT has been required to comply fully with the conditions of the interim order as an alternative to complying with the requirements of the above-listed OSHA standards.

After reviewing and evaluating the alternative means of protection that JHT proposed to provide its employees, and the one comment that OSHA received during the public comment period, OSHA has determined that the alternative conditions detailed in this permanent variance will provide JHT's employees working conditions that are as safe and healthful as those which would prevail if JHT complied with 29 CFR 1910.430(d)(3), 1910.430(d)(4), 1910.423(b)(2), 1910.423(c)(1), 1910.423(c)(3), and 1910.424(b)(2). Based on the record discussed above, and in accordance with section 6(d) of the OSH Act (29 U.S.C. 655(d)), OSHA grants JHT's application for a permanent variance. This order prescribes the conditions that JHT must maintain, adopt, and utilize to the extent they differ from the standards in question.

Under the terms of this permanent variance, JHT must: (1) comply with the conditions listed below under Section VI of this notice ("Order"); (2) comply fully with

all other applicable provisions of 29 CFR part 1910; and (3) provide a copy of this *Federal Register* notice to all employees affected by the conditions using the same means it used to inform these employees of its application for a permanent variance. This order will remain in effect unless OSHA modifies or revokes this final order in accordance with 29 CFR 1905.13.

VI. Order

As of the effective date of this final order, OSHA is revoking the Interim Order granted to the employer on August 2, 2017 (82 FR 35995).

OSHA issues this final order authorizing Jardon and Howard Technologies, Incorporated (“JHT”) to comply with the following conditions instead of complying with the requirements of paragraphs 29 CFR 1910.430(d)(3), 1910.430(d)(4), 1910.423(b)(2), 1910.423(c)(1), 1910.423(c)(3), and 1910.424(b)(2) of OSHA’s commercial diving standard. The conditions apply to all of JHT’s commercial diving operations that it conducts with NOAA under the NOAA Diving Program (NDP). These conditions are:

A. Scope

1. The permanent variance applies only to JHT’s commercial diving operations conducted for NOAA under the control of the NOAA Diving Program.
2. The permanent variance only applies to JHT diving operations that are covered under Subpart T of 29 CFR Part 1910 (see 29 CFR 1910.401(a)).

Accordingly, the variance will only apply when the dive location is within OSHA’s geographical authority, as defined by 29 U.S.C. 653(a), and when such operations are not covered by the U.S. Coast Guard.

3. The permanent variance does not apply to commercial diving operations exempted by 29 CFR 1910.401(a)(2), including diving operations performed solely for instructional purposes, using open-circuit, compressed-air SCUBA and conducted within the no-decompression limits; diving performed solely for search, rescue, or related public safety purposes by or under the control of a governmental agency; diving for research, development, or related purposes involving human subjects, as governed by 45 CFR Part 46 or equivalent rules or regulations established by another federal agency; and scientific diving. To qualify for the scientific diving exemption, all of the requirements in 29 CFR 1910.401(a)(2)(iv) and Appendix B to 29 CFR Part 1910, Subpart T, must be met.
4. Except for the requirements specified by 29 CFR 1910.430(d)(3), 1910.430(d)(4), 1910.423(b)(2), 1910.423(c)(1), 1910.423(c)(3), and 1910.424(b)(2), JHT must comply fully with all other applicable provisions of Subpart T of 29 CFR Part 1910 when conducting commercial diving operations.

B. Definitions

The following definitions apply to this permanent variance:

ATA—Atmosphere(s) Absolute

BCD—Buoyancy Compensator Device

CDO—Commercial Diving Operations

DCS—Decompression Sickness

FSW—feet of seawater

JHT–Jardon and Howard Technologies, Incorporated

NDP–NOAA Diving Program

OSHA–Occupational Safety and Health Administration

OTPCA–OSHA’s Office of Technical Programs and Coordination Activities

p.s.i.–pounds per square inch

SCUBA–Self Contained Underwater Breathing Apparatus

C. Requirements for Inflatable Flotation Devices

1. When using a BCD for SCUBA diving, JHT must ensure that: the device is used in accordance with the manufacturer’s instructions; is capable of being inflated orally and via the diver’s primary breathing gas supply; and all divers carry an independent reserve cylinder of breathing gas with a separate regulator that could be used for BCD inflation in an emergency.
2. When SCUBA diving, JHT must ensure that divers use an inflatable flotation device that is: capable of maintaining the diver at the surface in a positively buoyant state; and have a manually activated inflation source, an oral inflation device, and an exhaust valve.
3. When SCUBA diving, JHT must ensure that divers are never permitted to dive alone unless they are line-tended and provided with topside support (as a minimum, topside support includes a designated person-in-charge and a standby diver).

D. Requirements for Decompression Chambers

1. For any dive that is outside the no-decompression limits or deeper than 130 FSW or using mixed gas with a percentage of oxygen less than air as a

breathing mixture, JHT must instruct the diver to remain awake and in the vicinity of the decompression chamber, which is at the dive location for at least one hour after the dive (including decompression or treatment as appropriate).

2. For any dive using air or nitrox breathing-gas mixture within the no-decompression limits that is deeper than 100 FSW but no deeper than 130 FSW, JHT must make available a decompression chamber that is: dual-lock, multiplace, and located within four hours of the dive location. JHT will have to meet the no-decompression provisions of Appendix C to the CDO rule (i.e., Condition 5, “Use of No-Decompression Limits”) and ensure that the partial pressure of oxygen in breathing-gas mixtures does not exceed 1.40 ATA or 40% by volume, whichever exposes the diver to less oxygen.
3. JHT must meet the medical-treatment provisions of Appendix C to the CDO rule (i.e., Condition 8, “Treating Diving-Related Medical Emergencies”).
4. JHT is prohibited from conducting SCUBA diving using air or nitrox breathing-gas mixture at depths deeper than 100 FSW but no deeper than 130 FSW, or outside the no-decompression limits, unless a 6 ATA decompression chamber is ready for use (diving operations performed for instructional purposes in accordance with § 1910.401(a)(2)(i) are exempt).

E. Worker Qualification and Training

JHT is required to:

1. Develop and implement an effective qualification and training program for its affected divers that, at a minimum, meets the requirements set forth in 29 CFR

1910.410 (qualifications of a dive team), and all of the requirements of the NDP;

2. Ensure that each affected diver (including, but not limited to, current and newly assigned to be involved in diving operations under the NDP) successfully completes all training required by the NDP to become a NOAA Diver;
3. Ensure that all divers complete all continuing training required by NDP to maintain status as an authorized NOAA Diver. At a minimum, the diver training program must include the following: (a) instruction in the conditions of the permanent variance; (b) annual refresher training in oxygen administration (academic and practical components); (c) instruction in maintaining current CPR/AED and First Aid certification; (d) maintaining proficiency in diving by making at least three (3) dives per quarter; (e) completing and passing an annual swim test; (f) completing and passing an annual skills test to demonstrate the diver's ability to safely operate underwater; (g) successfully completing one or more annual rescue drills to demonstrate the diver's ability to surface, extricate, treat and evacuate the victim of a diving accident; and (h) instruction in properly verifying that the diver's life support gear was serviced annually by a certified technician;
4. Document the training in order to provide a means of tracking the training received by divers and, consequently, to prompt JHT to update that training if necessary.

F. Recordkeeping

JHT is required to:

1. Maintain records of recordable injuries that occur as a result of diving operations conducted for NOAA under the NDP;
2. Ensure that the information gathered and recorded under this provision, in concert with the information provided under condition G (using OSHA 301 Incident Report form to investigate and record dive-related recordable injuries as defined by 29 CFR 1904.4, 1904.7, 1904.8 through 1904.12), would enable the JHT and OSHA to determine the effectiveness of the permanent variance in preventing DCS and other dive-related injuries and illnesses.

G. Notifications

1. Notify the OTHCA and the Area Office closest to the dive location of any recordable injuries, illnesses, in-patient hospitalizations, amputations, loss of an eye, or fatality that occur as a result of diving operations within eight (8) hours of the incident;
2. Provide OTHCA and the Area Office closest to the dive location within twenty-four (24) hours of the incident with a copy of the incident investigation report using OSHA 301 form;
3. Include on the OSHA 301 form information on the diving conditions associated with the recordable injury or illness, the root-cause determination, and preventive and corrective actions identified and implemented;
4. Provide certification that it informed affected divers of the incident and the results of the incident investigation;

5. Notify OTPCA and the Area Office closest to the dive location within fifteen (15) working days should JHT need to revise its dive procedures to accommodate changes in its diving operations that affect its ability to comply with the conditions of the permanent variance;
6. Obtain OSHA's written approval prior to implementing the revision in its dive procedures to accommodate changes in its diving operations that affect its ability to comply with the conditions in the permanent variance;
7. By the fifteenth (15th) of January, at the beginning of each new calendar year, provide OTPCA, and the Area Offices and their corresponding Regional Office closest to the preceding year's dive locations, with a report summarizing the dives completed during the year just ended and evaluating the effectiveness of the permanent variance conditions in providing a safe and healthful work environment and in preventing dive-related incidents;
8. Notify OSHA if it ceases to do business, has a new main office address or location, or transfers the operations covered by the permanent variance to a successor company; and
9. Ensure that OSHA would approve the transfer of the permanent variance to a successor company.

OSHA will publish a copy of this notice in the *Federal Register*.

Authority and Signature

Loren Sweatt, Acting Assistant Secretary of Labor for Occupational Safety and Health, 200 Constitution Avenue, NW, Washington, DC 20210, authorized the preparation of this notice. Accordingly, the agency is issuing this notice pursuant to Section 29 U.S.C. 655(6)(d), Secretary of Labor's Order No. 1-2012 (77 FR 3912, Jan. 25, 2012), and 29 CFR 1905.11.

Signed at Washington, DC on May 1, 2019.

Loren Sweatt,

Acting Assistant Secretary of Labor for Occupational Safety and Health.

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